

above ground storage tank
air quality
asbestos/lead-based paint
baseline environmental assessment
brownfield redevelopment
building/infrastructure restoration
caisson/piles
coatings
concrete
construction materials services
corrosion
dewatering
drilling
due care analysis
earth retention system
environmental compliance
environmental site assessment
facility asset management
failure analyses
forensic engineering
foundation engineering
geodynamic/vibration
geophysical survey
geosynthetic
greyfield redevelopment
ground modification
hydrogeologic evaluation
industrial hygiene
indoor air quality/mold
instrumentation
masonry/stone
metals
nondestructive testing
pavement evaluation/design
property condition assessment
regulatory compliance
remediation
risk assessment
roof system management
sealants/waterproofing
settlement analysis
slope stability
storm water management
structural steel/welding
underground storage tank

SAMPLING AND ANALYSIS PLAN

**1101 Industrial Avenue
Albion, Michigan**

**SME Project Number: KE60854D-01
January 12, 2010**



Soil and Materials Engineers, Inc.

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	PROPERTY HISTORY, CURRENT CONDITIONS AND PLANNED PROPERTY ASSESSMENT	2
2.1	Property History	2
2.2	Current Conditions	2
2.3	Planned Property Assessment.....	3
3.0	SAMPLING PLAN	4
3.1	Summary of Soil and Groundwater Sampling Locations.....	4
3.1.1	Industrial Operations	4
3.1.2	General Coverage and Off-site Sources	4
3.2	Sampling Procedures and Methods	5
3.2.1	Soil Sampling	5
3.2.2	Groundwater (Grab) Sampling	5
3.2.3	Sampling Quality Control/Quality Assurance	6
3.3	Waste Management	6
4.0	ANALYSIS PLAN	7
5.0	DATA EVALUATION AND REPORTING	8
6.0	ESTIMATED SCHEDULE	9

ATTACHMENTS:

Figures
Tables

1.0 INTRODUCTION

The City of Albion (City), Michigan, has received a United States Environmental Protection Agency (U.S. EPA) Brownfields Assessment Grant for hazardous substances in the amount of \$200,000. The City intends to support the redevelopment of the brownfield property located at 1101 Industrial Avenue, Albion, Calhoun County, Michigan (the Property). Assessment Grant funds will be used to conduct environmental due diligence to support acquisition of the Property by Johnson Systems, Inc. (Johnson Systems). Johnson Systems plans to purchase the Property and continue leasing it to the existing tenant, Michigan Waterjet.

The general location of the Property is shown on Figure 1. The Property consists of approximately 15.44 acres of land developed with a manufacturing building and a garage. Commercial sites adjoin the Property to the west, north, and east; the Norfolk Southern Railroad and wooded land adjoin the Property to the south.

Soil and Materials Engineers, Inc. (SME), environmental consultant for the City, prepared this Sampling and Analysis Plan (SAP) as a requirement of the U.S. EPA brownfields grant program for use of Assessment Grant funds. The funds will be used as described in this SAP to evaluate current Property environmental conditions for the purpose of supporting environmental due diligence and liability management (completion of a Baseline Environmental Assessment (BEA)) for the future owner. Descriptions of the Property history and known current environmental conditions; strategies, and procedures for soil and groundwater sampling, chemical analyses of collected soil and groundwater samples, data evaluation and reporting; and the estimated project schedule are presented in the following sections.

2.0 PROPERTY HISTORY, CURRENT CONDITIONS, AND PLANNED PROPERTY ASSESSMENT

2.1 Property History

Based on SME's review of historical information, the Property had been developed for agricultural purposes by 1938. The general area in which the Property is located was subsequently converted into an industrial park, and the current manufacturing building was built in 1967. Various companies, including manufacturers of satellite antennae and roofing shingles, occupied the Property through 2009. The current general Property features are depicted on Figure 2.

2.2 Current Conditions

SME's knowledge of suspected/potential environmental impacts on the Property was developed through completion of a Phase I Environmental Site Assessment (ESA) of the Property in January 2010. Based on the results of the Phase I ESA, SME identified the following recognized environmental conditions (RECs) in connection with the Property:

- The potential for environmental impact from undocumented and/or undetected releases of hazardous substances and/or petroleum products associated with the past and present industrial operations on the Property, including the former use of a 500-gallon gasoline UST on the Property, and
- The potential migration of hazardous substances and/or petroleum products onto the Property from the south adjoining "city dump" site.

After the Phase I ESA was published, a representative of the City provided SME with the following document:

- *Subsurface investigation at Albion Industries Plant 2 in Albion, Michigan, prepared for The Marmon Group, Inc., by Clayton Environmental Consultants, June 9, 1994.*

According to the report, trichloroethene (TCE) was measured at concentrations above laboratory reporting limits, but below current Michigan Department of Environmental Quality (MDEQ) Part 201 Generic Residential Cleanup Criteria, in soil samples collected from a former burn pit near the southwestern corner of the manufacturing building.

2.3 Planned Property Assessment

The assessment activities described in this SAP are designed to characterize current Property conditions to support identification of potential environmental liability and safe use issues for the future Property owner. The Property assessment goal will be achieved through accomplishment of the following objectives:

- Screen reasonably ascertainable potential sources of environmental impact for soil and/or groundwater contamination present at concentrations above Part 201 Generic Residential Cleanup Criteria. If such contamination is present, the Property will be a "facility" as defined by Section 20101(1)(o) Part 201 of the Michigan Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended (Part 201).
- Generate sufficient assessment data so that if the Property is a facility, the data will support preparation of a Category S Baseline Environmental Assessment (BEA) report on behalf of the prospective owner. A BEA may provide the prospective owner with protection under Part 201 and Part 213 of the Michigan NREPA from liability for cleanup of contamination existing on the Property at time of acquisition.
- Screen for soil and/or groundwater contamination present at concentrations exceeding Part 201 generic residential direct human exposure criteria (direct contact and inhalation pathways), which would impart a Part 201 Due Care obligation upon the new Property owner. The assessment may not generate sufficient data to identify the nature and extent of contamination needed to support preparation of a Due Care Plan if criteria exceedences are identified.

3.0 SAMPLING PLAN

The sampling plan for the assessment activities is presented in this section. The sampling plan includes discussions of the following: 1) summary of soil and groundwater sampling locations and rationales, and 2) descriptions of procedures and methods for field sampling. Tables 1 and 2 present summaries of the soil and groundwater samples to be collected for this assessment. The soil and groundwater sampling locations described in this sampling plan are depicted on Figure 2.

3.1 Summary of Soil and Groundwater Sampling Locations

SME will collect soil and/or groundwater samples from the 18 locations shown in Figure 2 to screen for environmental impact from on-site industrial operations and off-site sources. The soil borings will be advanced using hydraulically driven, direct-push coring equipment. Soil samples will be collected from each boring for visual classification, field screening, and chemical analyses. Groundwater samples will be collected from selected locations for chemical analyses. Specific sampling objectives and their respective sampling locations are discussed in the following subsections. The site assessment sampling strategies are discussed in the following subsections and summarized in Table 1. Soil and groundwater sampling methods are described in Section 3.2.

3.1.1 Assessment of Potential Releases from Industrial Operations

Thirteen soil borings (SB5 through SB17) will be advanced in and around the buildings on the Property to assess for environmental impact from undetected and/or undocumented releases of hazardous substances and/or petroleum products from the industrial operations on the Property. Soil borings SB5 through SB9, and SB17 will be advanced to a depth that is the shallower of approximately 24 feet below grade or where groundwater is encountered; temporary groundwater wells will be installed in these boreholes for collection of groundwater samples. The remaining soil borings will be advanced to a depth of approximately four feet below grade.

Soil and groundwater samples collected from all these borings will be submitted for laboratory analyses of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), arsenic, barium, cadmium, total chromium, copper, total lead, mercury, selenium, silver, and zinc (Michigan 10 Metals).

3.1.2 General Coverage and Off-site Sources

Five soil borings (SB1 through SB4 and SB18) will be advanced on the western, northern, and southeastern portions of the Property to assess general site conditions and the potential migration of hazardous substances and/or petroleum products from the south adjoining

railroad and "city dump" site. Soil borings SB3 and SB4 will be advanced to a depth that is the shallower of approximately 24 feet below grade or where groundwater is encountered; temporary groundwater wells will be installed in these boreholes for collection of groundwater samples. The remaining soil borings will be advanced to a depth of approximately eight feet below grade. Soil and groundwater samples collected from all these borings will be submitted for laboratory analyses of VOCs, PAHs, and Michigan 10 Metals.

3.2 Sampling Procedures and Methods

Soil and groundwater sampling and quality assurance/quality control (QA/QC) are summarized in this subsection.

3.2.1 Soil Sampling

Soil samples will be collected from each boring location at the depths described in Table 1. Surficial soil samples will be collected to assess for spills and/or releases of hazardous substances to the ground surface. Deeper samples will be collected where historical data indicated the potential for subsurface releases (e.g. from USTs) or residual contamination that migrated from surface or near-surface releases (e.g. burn pit area). SME field personnel initially will screen soil cores visually and with a photo-ionization detector (PID) for evidence of contamination. Soil samples will be collected for chemical analyses as described below:

- If visual observations, PID readings, staining, or odors do not indicate at least one area of impact in the soil column, soil samples will be collected as listed below:
 - SB1 through SB7, SB9, SB10 through SB16, and SB18: surface to one foot below grade to assess surficial soil impact
 - SB5 through SB9 and SB17: one-foot interval at the capillary fringe to assess soil impact transported in groundwater
 - SB8: one-foot interval at the interface of backing and native soil beneath the remediated former burn pit to assess potential residual contamination
- If visual observations, PID readings, staining, or odors in the sampled soil column indicate one or more separate areas of impact at depth intervals different from those described above, one additional soil sample will be collected from the area of highest indicated impact.

Soil samples will be collected during sampling activities according to the methods described in SOP 1, Soil and Groundwater Sampling Using Direct-Push Methods, included in SME's January 2010 Quality Assurance Project Plan (QAPP).

3.2.2 Groundwater (Grab) Sampling

Groundwater grab samples will be collected from the following sampling locations: SB3 through SB9 and SB17. The assessment objectives for sampling these locations are presented in Table 1. Samples will be collected, using low-flow techniques, from temporary well screens placed in the open boreholes as described in SOP 1.

3.2.3 Sampling Quality Control/Quality Assurance

QA/QC samples will be collected as described in SOP 6, Field Quality Control Samples, included in the project QAPP. A summary of the QA/QC samples to be collected is presented in Table 2.

3.3 Waste Management

Investigation-derived wastes will be handled as described in SOP 12, Investigated Derived Wastes, included in the project QAPP.

4.0 ANALYSIS PLAN

The following classes of target analytes were selected for analyses of soil and groundwater samples based on the historical industrial use of the Property: VOCs, PAHs, Michigan 10 Metals. The target analytes included in the VOC and PAH analyses are described in the project QAPP. A summary of the samples to be analyzed for each analyte group during this assessment is presented in Table 2. Laboratory analyses and field screening will be performed as described in the project QAPP.

Fibertec Environmental Services of Holt, Michigan, will analyze the samples for the following constituents using the referenced methods:

- VOCs – EPA Method 8260
- PAHs - EPA Method 8270
- Metals - EPA Methods 6020, 7471 (mercury), and 7196A (hexavalent chromium)

Laboratory testing, analysis method reporting limits (MRLs), QA/QC procedures, and reporting protocols used or performed by Fibertec will be consistent with those described in the project QAPP. In accordance with MDEQ-RRD guidance document *Threshold Concentration for Total Soil Lead Analysis*, dated March 6, 2006, if total lead is measured in soil at a concentration above 75,000 µg/kg, the soil sample also will be analyzed for fine/coarse lead fractions. In addition, if total chromium is measured in any soil sample at a concentration above the most restrictive Part 201 generic residential cleanup criterion for hexavalent chromium, the sample may also be analyzed for hexavalent chromium.

5.0 DATA EVALUATION AND REPORTING

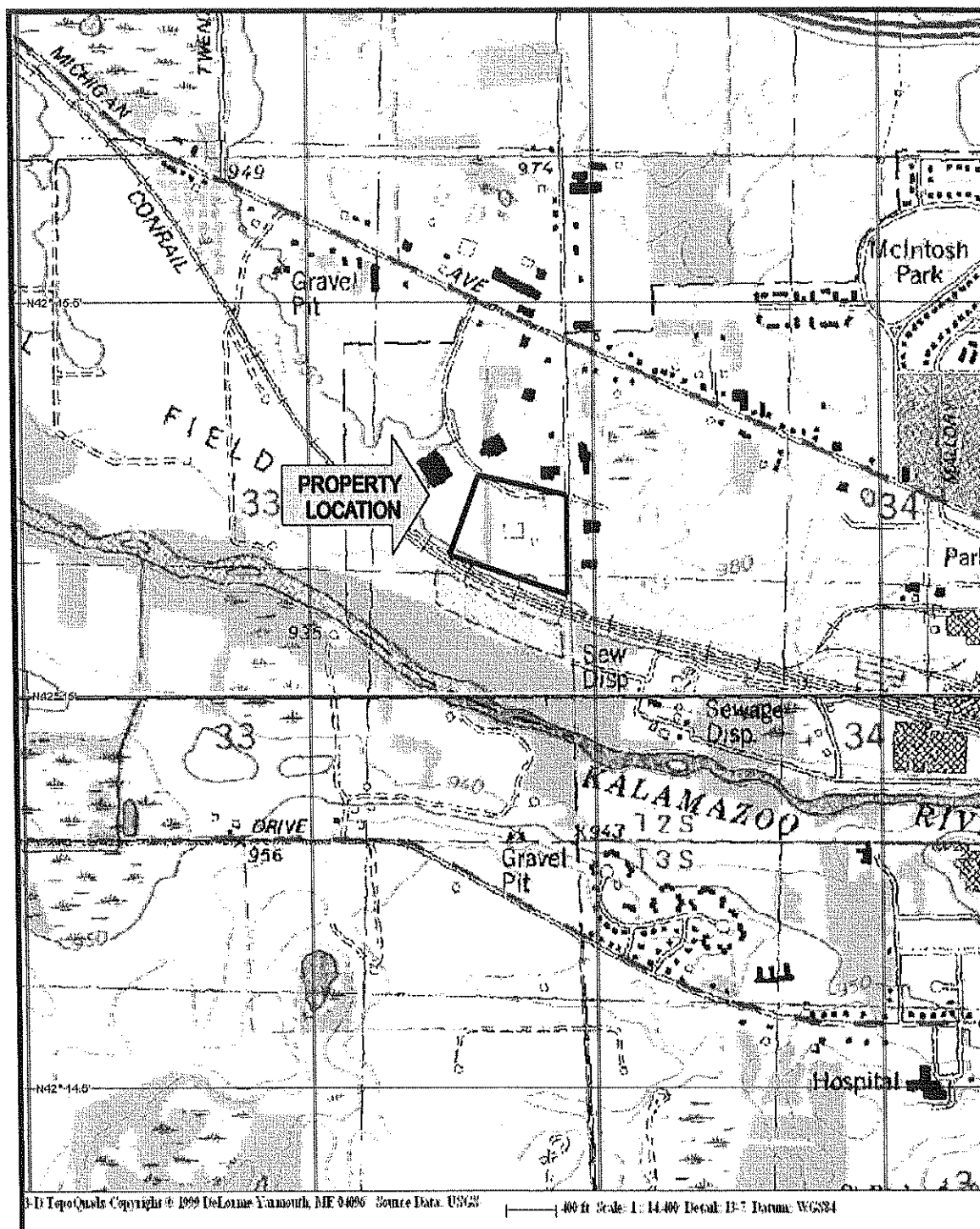
Data collected during this Property assessment will be evaluated as described in Section 4.0 - Data Verification/Validation and Usability of the project QAPP. Following data review, verification, and validation, SME will prepare a Phase II ESA report and/or a BEA report. The report(s) will include details of the activities performed, procedures followed, and results. The report(s) will include a sampling location diagram, tabulated analytical results, soil boring logs, a copy of the laboratory analytical report for all samples collected, and a copy of the chain-of-custody (COC) records.

6.0 ESTIMATED SCHEDULE

The environmental activities described in this SAP are to be implemented according to the schedule presented below. This schedule is in weeks relative to EPA approval of the final SAP.

- Field sampling..... Week 1
- Laboratory analyses..... Week 2 through Week 3
- Data evaluation and reporting..... Week 3 through Week 4

FIGURES



NORTHWEST ALBION QUADRANGLE (1980)
CALHOUN COUNTY, MICHIGAN

DELORME 3D TOPO QUADS ON CD



4705 CLYDE PARK SW
GRAND RAPIDS, MICHIGAN
(616)406-1756

BAY CITY
GRAND RAPIDS
INDIANAPOLIS
KALAMAZOO
LANSING
PLYMOUTH
SHELBY
TOLEDO
TRAVERSE CITY

DATE: 12/22/09
DRAWN BY: KLL
SCALE: AS SHOWN
JOB: KE60854A-02

PROPERTY LOCATION MAP
1101 Industrial Avenue
Albion, Michigan

TABLES

TABLE 1
SAMPLE DEPTH SUMMARY TABLE
1101 Industrial Avenue
Albion, Michigan
SME Project No. KE60854D-01

Sample Location	Soil Sample Depths			Groundwater Samples	Sample Rationale
	Surficial (surface to 1 ft. bgs)	Base of former remediation excavation (6 ft. to 8 ft. bgs)	Capillary fringe: Approximately 22 ft. to 24 ft. bgs		
Industrial Operations					
SB5 through SB7 and SB17 ⁽²⁾	✓		✓	✓	Assess potential former locations of 500-gallon gasoline UST
SB8 ⁽²⁾		✓	✓	✓	Collect native soil sample at the fill/native soil interface beneath backfilled former burn pit remediation excavation
SB9 ⁽²⁾	✓		✓	✓	Assess potential impacts from chemical storage and possible former location of UST
SB10 through SB16 ⁽¹⁾	✓				Evaluate potential impacts beneath buildings
General Coverage and Offsite Sources					
SB1, SB2, SB18 ⁽¹⁾	✓				Screen for surface releases
SB3, SB4 ⁽¹⁾	✓			✓	Screen for surface releases and potential migration of contamination in groundwater from south adjoining properties

¹If visual observations, photoionization detector (PID) readings, staining, or odors indicate one or more separate areas of impact in the soil column at depths greater than two feet below ground surface (bgs), a deeper soil sample(s) may be collected from the soil column.

²If visual observations, PID readings, staining, or odors indicate one or more separate areas of impact in the soil column at depths not sampled as described above, additional soil samples may be collected from the soil column.



TABLE 2
CHEMICAL ANALYSES SUMMARY
 1101 Industrial Avenue
 Albion, Michigan
 SME Project No. KE60854D-01

Property Assessment Location		Soil Borings	Temporary Monitoring Wells	Sample Matrix	Analytes		
					VOCs	PAHs	Metals [1,2]
Industrial Operations (SB5 through SB17)		13	6	Soil	19	19	19
				Groundwater	6	6	6
General Coverage and Off-site Sources (SB1 through SB4 and SB18)		5	2	Soil	5	5	5
				Groundwater	2	2	2
TOTALS		18	8	Soil	24	24	24
				Groundwater	8	8	8
QA/QC Samples	VOC Trip Blank			Soil	-	-	-
				Groundwater	2	-	-
	Methanol Blank			Soil	1	-	-
				Groundwater	-	-	-
	Field Blank			Soil	-	-	-
				Groundwater	1	1	1
	Equipment Blank			Soil	-	-	-
				Groundwater	1	1	1
	Field Duplicate			Soil	2	2	2
				Groundwater	1	1	1
	Matrix Spike			Soil	2	2	2
				Groundwater	1	1	1
	Matrix Spike Duplicate			Soil	2	2	2
				Groundwater	1	1	1
TOTAL SAMPLES				Soil	31	30	30
				Groundwater	15	13	13

Notes:

1. As discussed in Section 4, soil samples with total lead measured above 75,000 ug/kg will also be analyzed as fine/coarse fractions.
2. Metals: arsenic, barium, cadmium, total chromium, copper, total lead, mercury, selenium, silver, and zinc.
3. If visual observations, photoionization detector (PID) readings, staining, or odors indicate the presence of one or more separate areas of impact in the soil column at depths other than those described above, additional soil sample(s) may be collected.

